REMARKS

In this Response, Applicants cancel claims 1-4, 6-7, 10-14, 47 and 50, amend claim 49, and add claims 53, 54, 55, 56 and 57. Applicants cancel the claims solely to expedite prosecution and do not acquiesce to any of the Examiner's rejections. Applicants reserve the option to further prosecute the same or similar claims in the present or a subsequent application. Upon entry of the Amendment, claims 48, 49, and 51-57 are pending in the present application.

The amendment to claim 49, and new claims 53, 54, 55, 56 and 57, are supported throughout the application. In particular, and without limitation, see: p. 11, ¶¶ 1, 2 (claims 49, 53); p. 24, ¶ 2 (claim 54); p. 5, ¶ 3 (claim 55); p. 17, ¶ 1 to p. 18, ¶ 1 (claims 56, 57).

The Examiner rejected claims 48-51 under 35 U.S.C. § 102(e) as being anticipated by Johnston et al.

The Examiner also rejected claim 52 under 35 U.S.C. § 103(a) as being unpatentable over Johnston in view of Dupuoy. (The Office Action formally lists the claim as being unpatentable "over Wagner in view of Takahashi," but then discusses Johnston and Dupuoy. We assume therefore that Johnston and Dupuoy are the basis of the rejection.)

Claim 48

In the Office Action, in finding independent claim 48 herein to be anticipated by Johnston, the Examiner asserted that Johnston disclosed all of the limitations of claim 48, including limitation (e). Limitation (e) of claim 48 is: "emulating the use of a click from the mouse to provide an input signal to the system, by providing an input signal in response to **the location of the feature in the video image changing by less than a defined amount during a defined period of time.**" (Emphasis added.) The Examiner stated that Johnston disclosed that feature at col. 7, lines 35-48. However, the cited excerpt from Johnston disclosed generating a "click" in response to "a **change** in the object image," and added, "for example, …when a steady radiation emission is **interrupted** for a predetermined minimum term." (Emphasis added.) Thus, in the excerpt cited by the Examiner, Johnston discloses generating a "click" of a mouse by reference to *changes* in the image, rather than by

reference to the image remaining *unchanged* as is required by limitation (e) of claim 48 herein. The cited excerpt from Johnston thus teaches away from the technique for generating a "click" – holding a feature in the image unchanged – disclosed in the methods herein and claimed in claim 48 herein. In the "Summary of the Invention," Johnston also describes the "clicking function" as generating a signal "in response to a **change** in the control object image." (Col. 6, ll. 40-45) (Emphasis added.) The Summary of Invention does not suggest generating a "click" in response to a feature in the image *not* changing.

(Johnston discloses generating a "click" by holding anything stationary only in conjunction with a specific *different* embodiment of his invention in which a "control object" which includes a light source is used to generate cursor motion. Col. 23, ll. 20-24. Johnston describes this embodiment as a "wand." Col. 20, ll. 44-53. By contrast, according to claim 48 herein it is the location of the user's feature in the video image that is to change less than a defined amount to generate a "click," not the location of a light source.)

Accordingly, Johnston does not anticipate claim 48 herein, and that claim should be allowed.

Johnston does not anticipate claim 48 for other reasons as well. Independent claim 48 is directed to a method for emulating a mouse in providing input to a system (such as a computer) that uses a visual display for providing user information and an indicator in the visual display (such as a cursor location) for permitting user control. As disclosed, the method utilizes available ambient lighting; it does not require the use of special lighting, or the placing of reflectors or other special equipment on the body, face or head of the user. The method involves tracking the location of a user feature or features, which often is but need not be part of the head. The camera which tracks the location of the user feature(s) need not be placed in a special location, so long as the location of the user feature(s) is within its field of view.

The Johnston patent is quite different. It describes a system in which a camera is located on or near the keyboard, and tracks the motion of the user's finger. (Col. 9, l. 66 to col. 10, l. 7; col. 10, ll. 32-37; col. 14, ll. 4-8). A light source may be co-located with the camera. (Col. 10, ll. 47-50; col. 11, ll. 10-12; col. 14, ll. 1-4)

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In particular, Johnston *teaches away from* the use of available ambient light such as the methods disclosed herein use. Johnston describes using light sources such as LEDs or IRLEDs for illumination of the subject, states that these sources are "nearly monochromatic," and explains that "[t]he monochromatic emissions make filtering of ambient relatively wide band light simple and inexpensive." (Col. 10, ll. 56-65) See also col. 21, ll. 9-11 ("wide band ambient light is preferably attenuated by filters") By stating that ambient light may be filtered, Johnston teaches that it is undesirable. Johnston also explains that while the useful image in its device is formed by reflected light from a light source, ambient light reflections also occur but are not the image of interest. (Col. 14, ll. 50-64) Johnston's teaching that ambient light generally may not be used as the source of illumination is reinforced by its description of an embodiment to provide a remote selection control (i.e., the "click" of a mouse), in which Johnston discloses a device without an integral light source, but only in conjunction with a special retroreflective target. (Col. 16, ll. 58-60) In contrast, the methods disclosed herein utilizing ambient light do not require any additional or special light source or reflective or retroreflective target.

The differences between Johnston and the methods disclosed herein are made evident by reviewing the independent claims in Johnston. None read on the methods disclosed herein. Independent claim 1 requires that the "clicking function" operate in response to a "change in the quantity of images having an intensity above the threshold intensity." In independent claim 48 herein, the "click" of the mouse is emulated in response to the location of a target feature changing by less than a defined amount during a defined period of time, not by an increase or decrease in the number of images having an intensity above a threshold. Johnston's independent claim 13 has the same requirement, as well as being limited to imaging fingers.

Johnston's independent claim 30 requires that the "clicking function" operate in response to a reduction in the intensity of the object image. In independent claim 48 herein, the "click" of the mouse is emulated in response to the location of a target feature changing by less than a defined amount during a defined period of time, not by a decrease in the intensity of the object image.

Johnston's independent claim 37 requires a "hand-operable reflective cursor control object formed of a retroreflective material." Independent claim 48 herein has no such limitation.

Johnston's independent claim 38 requires "illuminating a hand-operable reflective cursor control object." Independent claim 48 herein does not include any hand-operated reflective objects.

Claims 49, 51 and 52.

It will be appreciated that, in view of the fact that Johnston does not anticipate claim 48, it also does not anticipate claims 49 or 51, which depend from that claim and previously also were rejected as anticipated by Johnston. Similarly, because Johnston does not anticipate claim 48, it and Dupouy together do not render obvious claim 52, which depends from claim 48.

New claims 53, 54, 55, 56 and 57.

Similarly, in view of the fact that new claims 53, 54, 55, 56 and 57 are dependent from claim 48, Johnston does not anticipate, and Johnston and Dupuoy together do not render obvious, those claims.

In addition, new claims 53 and 54 are not anticipated by Johnston, or rendered obvious by Johnston and Dupuoy together, because claims 53 and 54 are limited to "the feature associated with a systems user includ[ing] at least a portion of one of the system user's head or face."

The Examiner stated that Johnston taught the first limitation of claim 48, "choosing a feature associated with a system user." (Col. 5, ll. 42-61) That disclosure is in conjunction with a system in which a finger of the user's hand is used as the "cursor control device," and in which the user moves the finger as a control mechanism. Thus, the feature associated with the user chosen in Johnston is the finger. Johnston *teaches away from* using the head, or any portion thereof, as the control device, except in conjunction with attaching an artificial target to the head. Johnston's only suggestion that the head could be used for tracking purposes is in conjunction with the use of a reflective device. Specifically, Johnston teaches that a reflective device may be used to augment the reflection from the user

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feature (Col. 12, ll. 62-67), and states that such a reflective device may be affixed to the user's head to create a "head tracker." (Col. 13, ll. 16-18; col. 17, ll. 23-25; col. 26, ll. 44-45) While Johnston discloses tracking the finger without using an attached reflective device, Johnston does not disclose tracking the head without a reflective device attached to the head. Johnston thus teaches away from the method claimed in clams 53 and 54. No reflective devices are required in the methods claimed in claims 53 and 54, and the head or face (or a portion thereof) are the feature tracked.

In addition, new claim 55 is not anticipated by Johnston, or rendered obvious by Johnston and Dupuoy together, because claim 55 is further limited to "video images from the video camera [being] formed by reflection of ambient light from objects in the video camera field of view including reflection from the feature associated with the system user." As discussed above, Johnston teaches the use of special light sources, including specifically monochromatic light sources, and *teaches away* from the use of ambient lighting by explaining that filters may be employed to filter out ambient light: "[t]he monochromatic emissions make filtering of ambient relatively wide band light simple and inexpensive." (Col. 10, ll. 56-65) See also col. 21, ll. 9-11 ("wide band ambient light is preferably attenuated by filters")

In addition, new claims 56 and 57 are not anticipated by Johnston, or rendered obvious by Johnston and Dupuoy together, because claims 56 and 57 are further limited to "the location of the feature in the video image at the given time [being] determined by correlating greyscale intensities of pixels in trial subimages of the video image at the given time, with greyscale intensities of pixels in a subimage including the chosen feature in the video image at the previous time, and selecting the trial subimage of the video image at the given time with the highest correlation to the subimage including the chosen feature in the video image at the previous time." In Johnston, the feature of interest is located in the camera field of view by selecting a threshold brightness value, and constructing an image consisting of the pixels with brightness values exceeding that threshold. See col. 6, ll. 1-4 ("signal thresholds to distinguish object images having an intensity above a predetermined threshold intensity"); col. 7, ll. 23-25; col. 12, ll. 10-13, 19-22; col. 14, l. 65 to col. 15, l. 5; col. 21, ll. 3-5, 11-14. The only alternative Johnston suggests is inverting the process, and

selecting instead "a negative or dark image." Col. 15, ll. 6-7. Johnston does not suggest the use of correlation techniques lacking brightness thresholds to locate features.

Since none of the prior art of record teaches or suggests the independent claim's subject matter, that claim is allowable, as are the claims that depend on it.
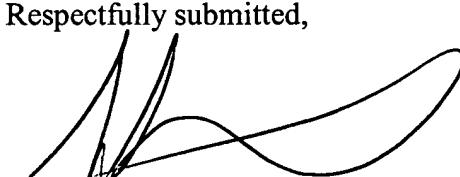
Previously-Submitted Supplemental Information Disclosure Statements

Applicants have previously submitted a Information Disclosure Statement on January 10, 2002, and Supplemental Information Disclosure Statements on January 25, 2002 and March 29, 2002. The Examiner considered the initial IDS in connection with the initial Office Action herein. However, Applicants have not received any indication that the Examiner has considered the two Supplemental Information Disclosure Statements.

Copies of the Supplemental Information Disclosure Statements are submitted herewith. Applicants respectfully request both be considered. Their initial submission was timely.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request that the Examiner allow the application as amended.

Respectfully submitted,

Date: May 6, 2005
Customer No: 25181 ·
Patent Group
Foley Hoag, LLP
155 Seaport Blvd.
Boston, MA 02210-2600

Stephen B. Deutsch, Reg. No. 46,663
Attorney for Applicants
Tel. No. (617) 832-1118
Fax. No. (617) 832-7000